

HEAT INJURY

INFORMATION FOR COMMANDERS

Introduction:

- Heat injury occurs when the body can no longer maintain its normal temperature range. There are symptoms that commanders and soldiers can recognize when heat injury is developing in a soldier.
- Troops are at greatest risk at the beginning of the heat season.
- Heat injury is always preventable by command intervention.

Overview:

- The human body maintains a narrow temperature range. When exposed to hot environments or increased heat loads (working in hot environments and/or wearing heavy equipment), the body will increase sweating to get rid of heat. Sweating cools the body through evaporation.
- The body can sweat up to two quarts or two liters per hour for short periods of time.
- Sweating will stop with continuing heat loads and inadequate fluid replacement. Eventually no more heat can dissipate through sweating and the core temperature of the body rises. This, along with a decreased blood in one's blood vessels due to fluid losses (sweat, breathing, urination), increases the soldier's risk for heat injury.

Heat illness:

- Heat illness has a range of signs and symptoms relating to underlying physical damage, from mild heat cramps to serious heat stroke.
- **Heat Cramps** – painful contractions of the muscles of the legs, abdomen, or back that may occur after working in a hot environment. They may be related to salt depletion due to sweating. They can occur during work or 1-2 hours following the end of the work activity.
- **Heat Exhaustion** – more serious form of heat injury than heat cramps. Signs/symptoms of heat exhaustion include headache, fatigue, dizziness, chills, nausea, and vomiting.
- **Heat Stroke** – most serious form of heat injury and is a medical emergency. Signs are similar to heat exhaustion, but in addition an individual shows agitation,

confusion, and possible unconsciousness. Heat stroke can lead to death due to elevated body temperature, metabolic disturbances, and kidney failure.

Acclimatization:

- The human body can acclimatize to working in hot environments. This process generally takes approximately **two weeks** of daily exposure to heat and adequate hydration. Acclimatization results in a more effective sweating process, where the soldier starts to sweat at a lower temperature and the sweat contains less salt. This results in earlier, more efficient cooling and increased blood volume that helps to maintain normal body function.
- Individual fluid requirements for each soldier are increased in hot environments even after acclimatization.
- **A soldier cannot acclimate to water deprivation** (reducing the water a soldier drinks).

Prevention - Command Emphasis:

- ***Commanders need to ensure adequate water intake of all soldiers, by providing time to drink and urinate during work periods.***
- Soldiers need to drink even if they do not feel thirsty. The thirst mechanism is not activated until the body is dehydrated to the point where the soldier is at least “a quart low”. This corresponds to a 1-liter deficit.
- Soldiers need to eat their field rations (including the salt packets). This provides for enough salt and calorie intake to replace that lost during sweating.
- The skin is an essential organ for proper thermoregulation. *Prevention of sunburn* by using sunscreen and proper wearing of uniform while in the sun *is necessary*.
- Commanders need to *follow the work/rest cycles that are determined by the WBGT* (Wet Bulb Globe Temperature Index) for their particular environmental location. Accurate index readings from the WBGT require readings be taken from troop location(s). Each unit is required to have a WBGT per FORSCOM Reg. 700-2 and Field Sanitation SOPs for this purpose.
- The maximum absorption of water from the gut is about 1.5 quarts or 1.5 liters per hour. Under extreme environmental conditions, a person can lose over two quarts or 2 liters of water per hour from sweating. Therefore, soldiers can become progressively dehydrated unless given the chance to cool off and reduce body temperature. This is accomplished by providing adequate rest cycles and shade.
- Unit Field Sanitation Teams (FSTs) are trained to provide heat injury prevention/awareness classes to leaders and soldiers, and should be used for such

training prior to the hot season. FSTs also are trained and equipped with WBGT to monitor heat conditions and advise unit commanders regarding water requirements, work-rest cycles, etc.

Summary:

- Heat injuries mean the loss of productive soldiers and long-term permanent profiles, and can also lead rapidly to death or permanent disability of a soldier.
- Heat injuries are prevented by educating soldiers and leaders, and through command influence.